



## *Integrated Hazard Information Services*

**RITT Forum  
Nov 16, 2011**

# Overview

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- Introduction
- History of IHIS
- Demo
- Design for National Database
- Requirements
- Next Steps and Future work

# Funding and Resources

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- National Weather Service – OS&T (Office of Science and Technology)
- GSD DDF (Global Systems Division Discretionary Director) and Base Funds
- CWB (Central Weather Bureau) Taiwan
- COMET – University of Southern Florida
- Southern Region -- NWSWarn

# Collaborations

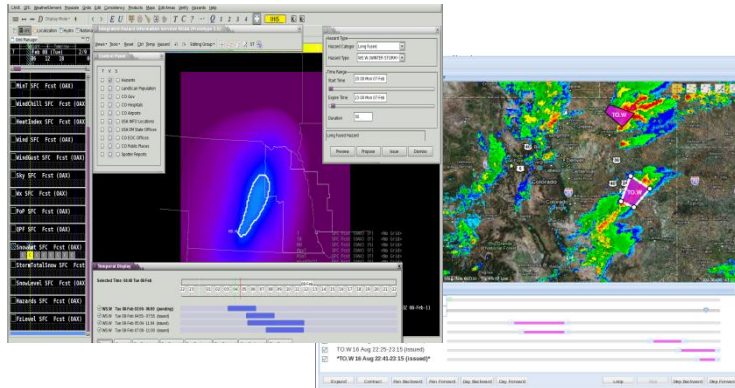
NWS National Centers  
**NCEP Development Team**

NWS Partners  
**BOU Office**

NWSWarn

AWIPS II  
Extended  
**Collaboration**  
**Data Delivery**  
**Thin Client**  
Verification

AWIPS II



**Central**  
**Weather**  
**Bureau**  
**Taiwan**

Raytheon

RENCI

MDL

Meteorological Development Lab

**Iris / iNWS**

**SSWIM**

Social Science Woven  
Into Meteorology

NSSL

National Severe Storms Lab

University of Wisconsin

**COMET**

# Social Science Partner Research



**Jen Spinney**, Researcher  
carrying out social science  
component of project

Social Science Woven into  
Meteorology (SSWIM)

SSWIM brought on board 2009

Preliminary Results from  
Current Research shared at  
AMS 2011

Today, provide a brief overview  
of the social science component  
and share several **practical  
applications for the IHIS  
prototype design.**

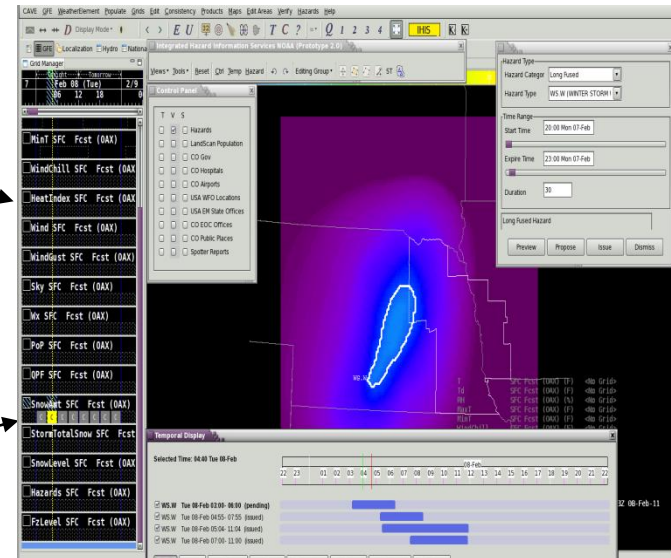
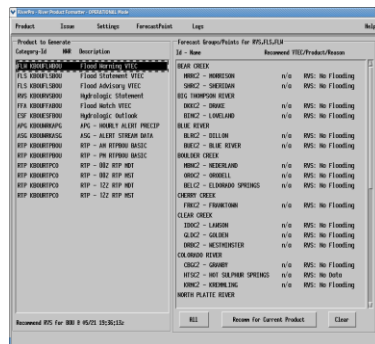
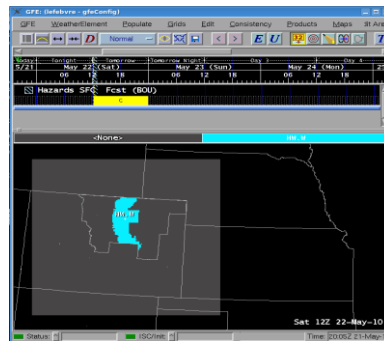
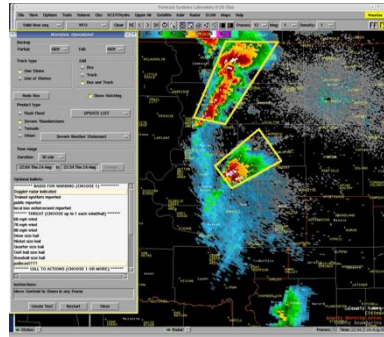


# WARNGEN

(< 1 hour)

GHG  
(Hours-Days)

RiverPro  
(Days)

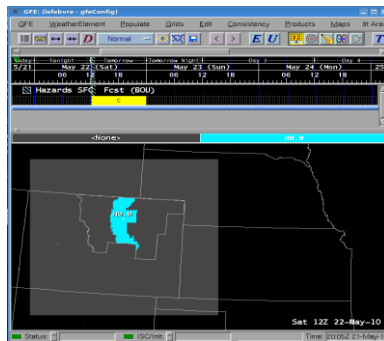


# IHS

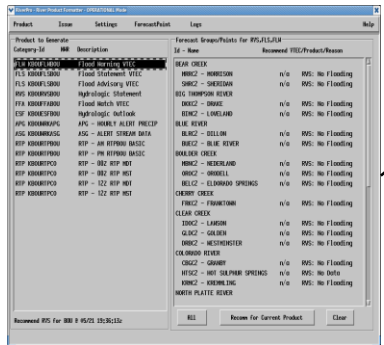


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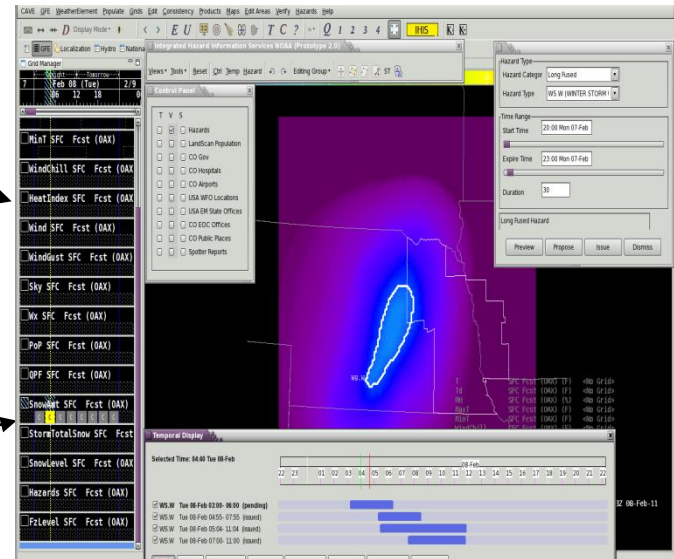
(< 1 hour)



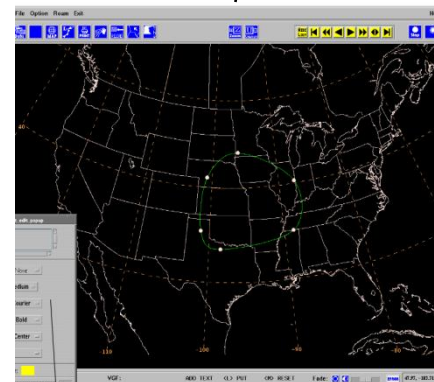
GHG  
(Hours-Days)



RiverPro  
(Days)



# IHS

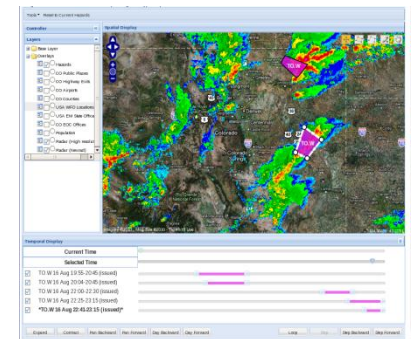
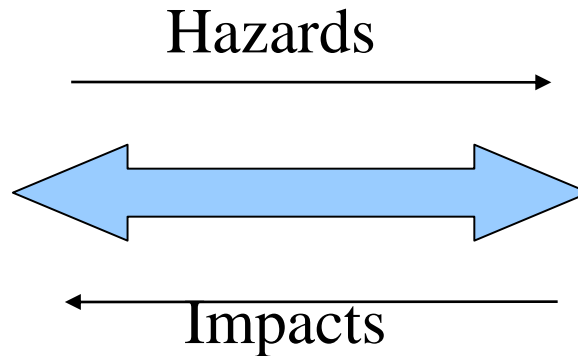
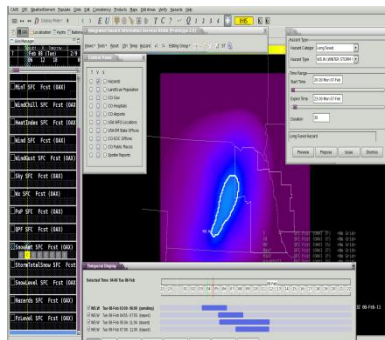


NMAP  
(National)

# Purpose -- Two-way Communication Phase 3

AWIPS II CAVE --  
Forecasters

Web -- Partners:  
EM's, Broadcasters  
Spotters, Publics



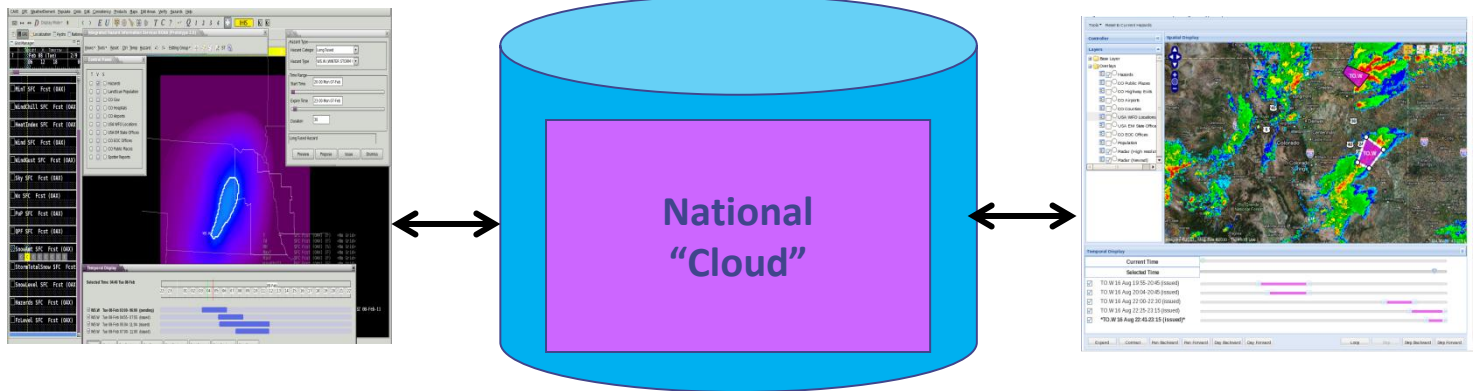


# Purpose -- Two-way Communication

## Phase 3

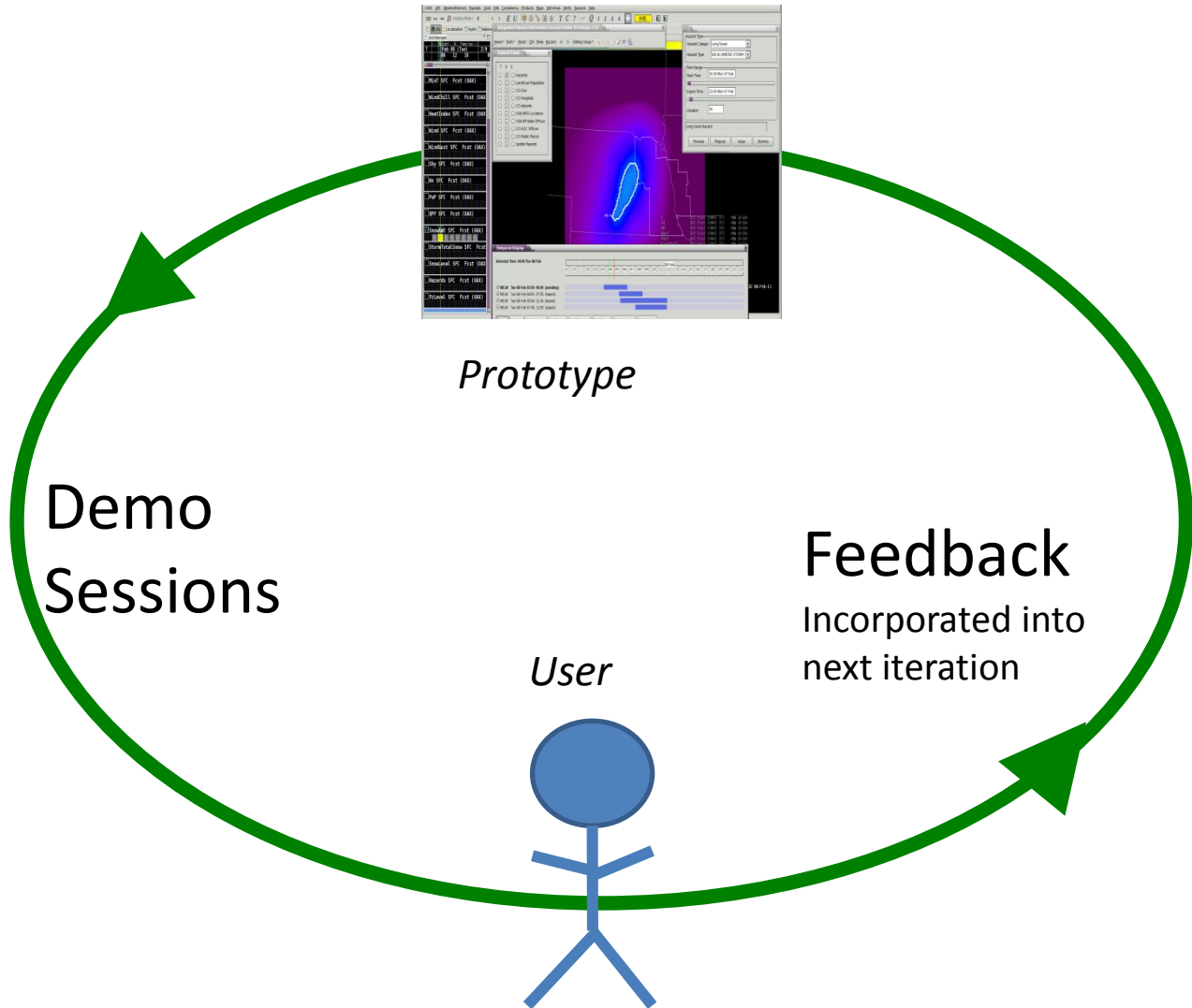
AWIPS II CAVE --  
Forecasters

Web -- Partners:  
EM's, Broadcasters  
Spotters, Publics



# Iterative Feedback Process

## “Build a little / Test a little”



# IHIS Project Portal : integratedhazards.noaa.gov

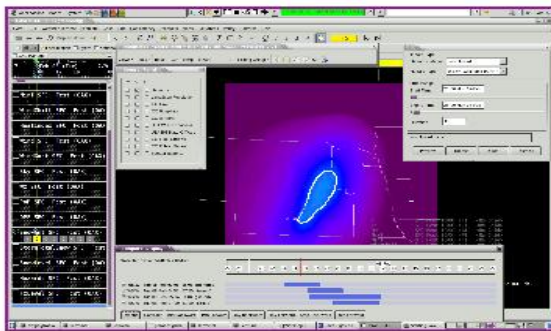
Help

tedhazards.noaa.gov/welcome/default/index

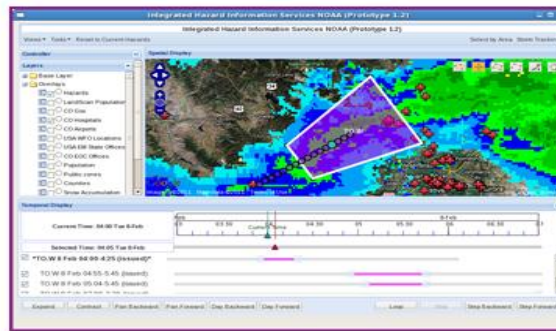


**\*\* EXPERIMENTAL PROTOTYPES (Best viewed in Firefox) - NOT OPERATIONAL! \*\***

- Comprehensive services for --
  - Issuing timely and accurate hazard information
  - Enabling two-way communication among all decision-makers



AWIPS II Forecaster Tools



Web-based Partner Interface

- Integrates National Weather Service (NWS) hazard tools
  - One common interface and process
  - Preserves efficiency of existing applications
  - Minimizes training
- Fosters collaboration among all stakeholders
  - All decision makers seeing the same picture
  - Emergency managers and other partners can provide ground truth (flooding, storm observations, impacts)

**The latest Web and CAVE Prototype Pathways 2.0 are Available!**

[IHIS Web Prototype](#)  
Stable version.

[IHIS Development](#)  
(Access Restricted)  
Development version - testing new code and features.

*\*Firefox strongly recommended*

## Instructions

Please follow the Job Sheet instructions and post any ideas and feedback on the IHIS listserver:

- [CPP2.0 CAVE Short-Fused Job Sheet](#)
- [CPP2.0 CAVE Long-Fused Job Sheet](#)
- [CPP2.0 CAVE Hydro Job Sheet](#)
- [WPP1.2 Web Short-Fused Job Sheet](#)
- [WPP2.0 Web Long-Fused Job Sheet](#)
- [WPP2.0 Web Hydro Instructions](#)
- [WPP2.0 Web Partner Instructions](#)

# History

- 2004 OSIP Project / Next Generation Warning Tool team
  - Telecons for Concept and Requirements discussions
- 2008 Workshop Norman OK, 130 attendees  
<http://www.weather.gov/warningworkshop>
  - 50% forecasters / program managers
  - 50% partners / FEMA / EM / Accuweather
- 2009 Integrated Hazard Information Services Workshop hosted by GSD, 70 attendees  
[http://fxa.noaa.gov/NGWT/NGWT\\_Workshop.html](http://fxa.noaa.gov/NGWT/NGWT_Workshop.html)
  - Forecasters / partners / developers / social scientists
  - 35-page report and set of requirements
  - Initial User Interface designed for prototyping
  - Listserver established

# History

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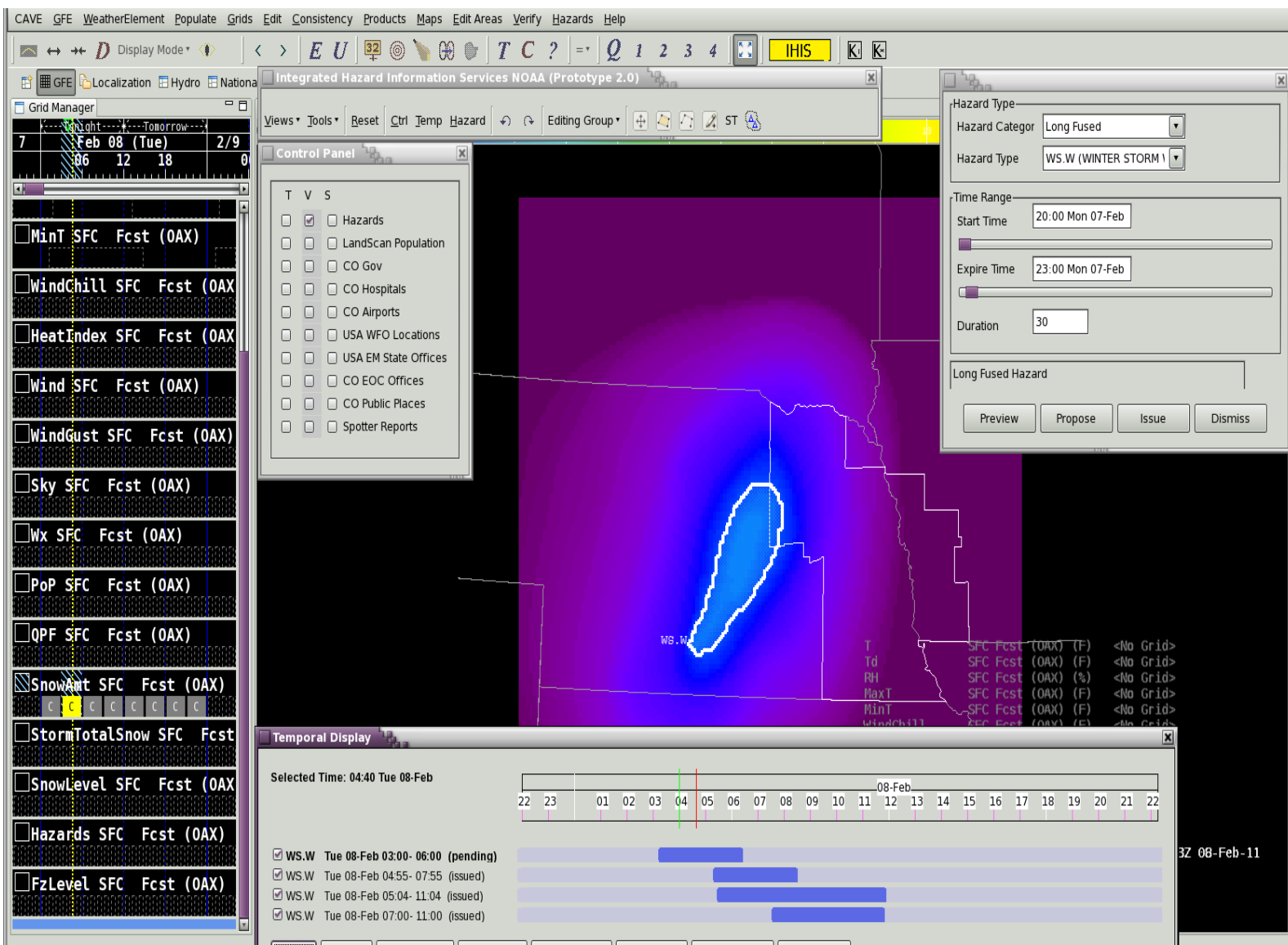
- 2010 Prototyping
  - Web-based short-fused TOR
  - Allowed for quick and broad forecaster feedback to refine requirements and user interface
  - Looking ahead to two-way communication
  - Developed capabilities and algorithms for AWIPS II CAVE

# History

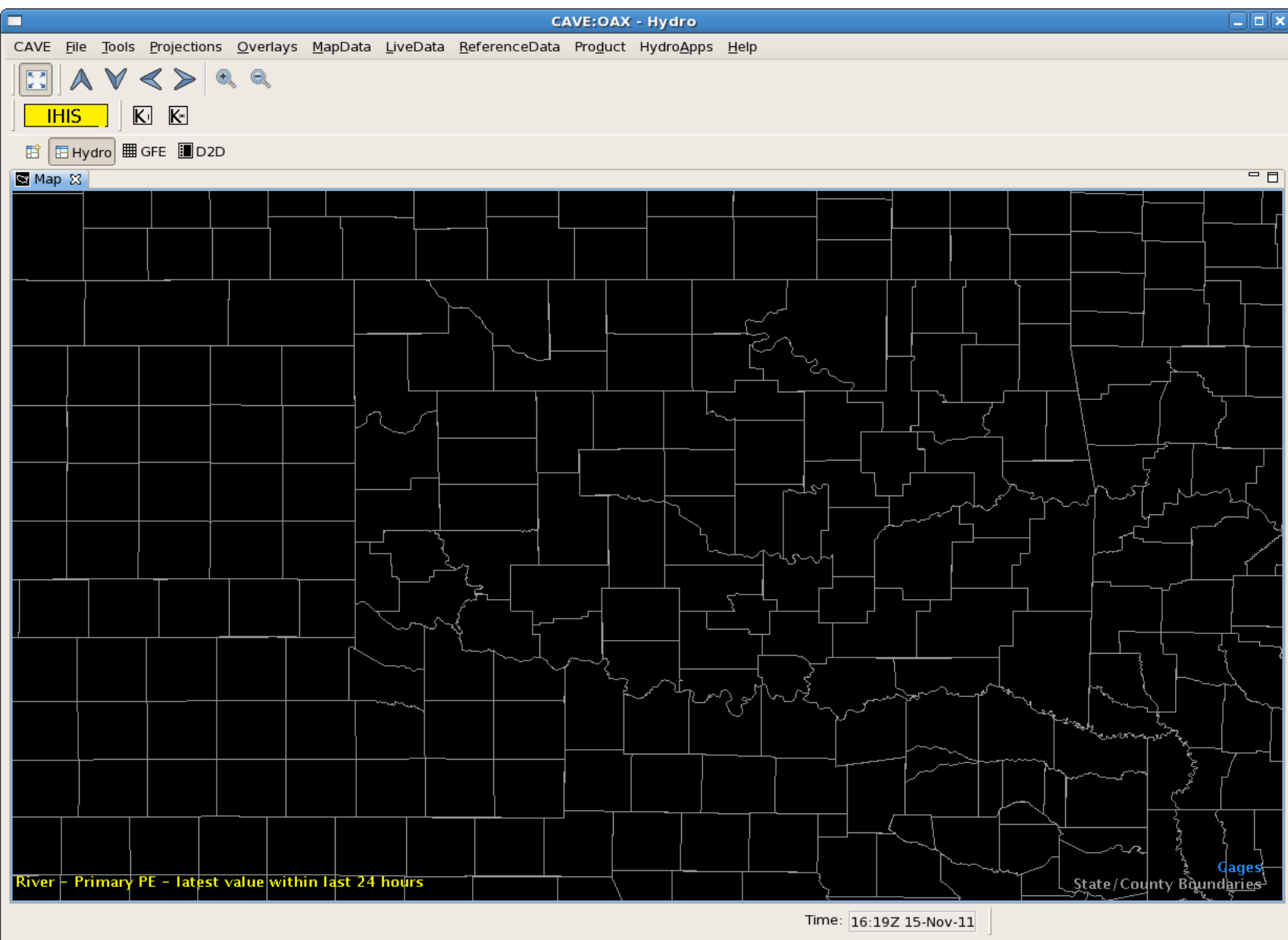
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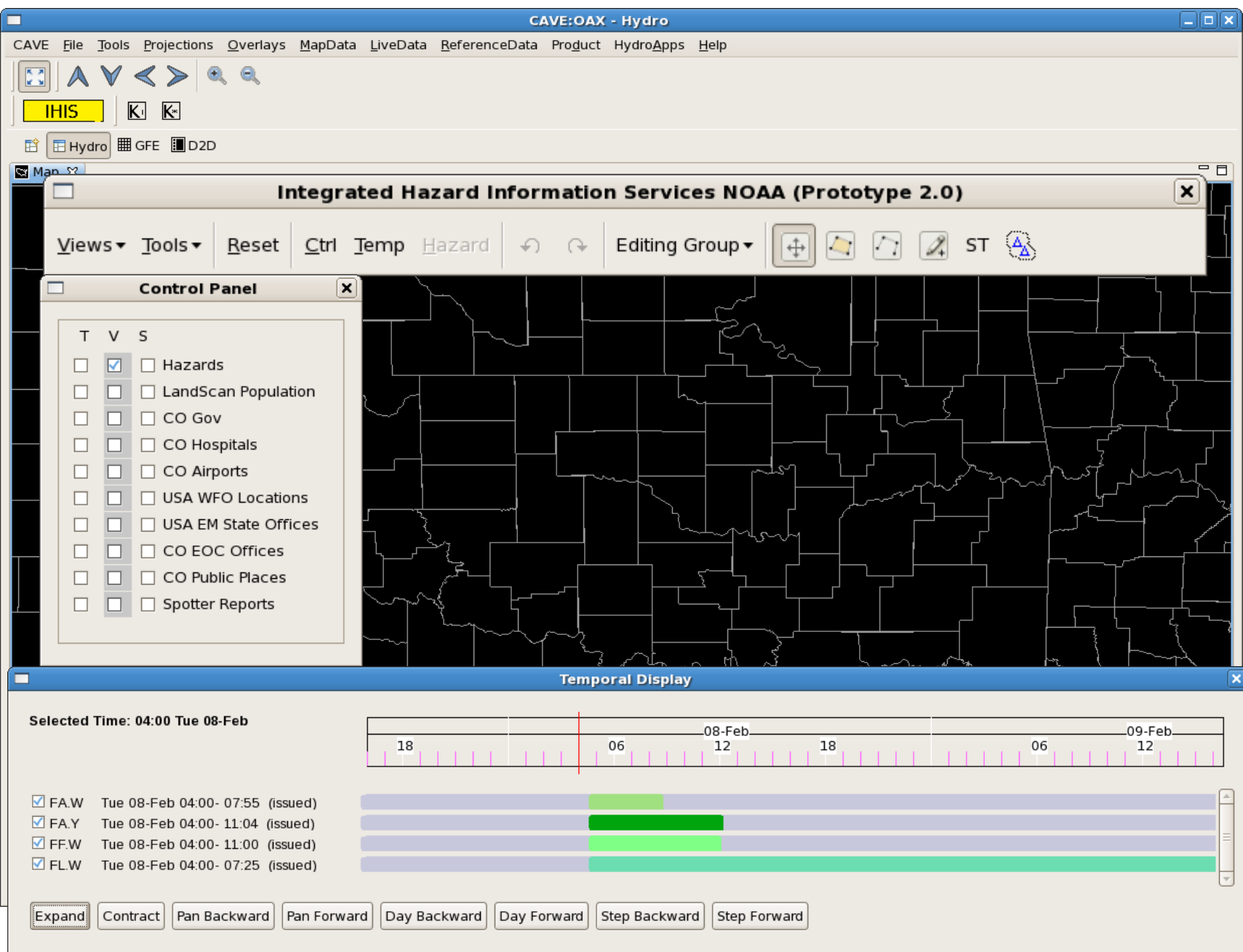
- 2011 Prototyping – Jan - Sept
  - AWIPS II CAVE Long and Short-fused
  - Utilization of PGEN drawing tools
  - GIS data – hospitals, Iris spotter reports, Census
  - Design and some development for “Live Data” and storage in Iris database
  - Preliminary Hydro requirements
  - Web-based prototype (prior to May)
  - IWT Workshop – Hydro/Partners – (June, Fargo, ND)

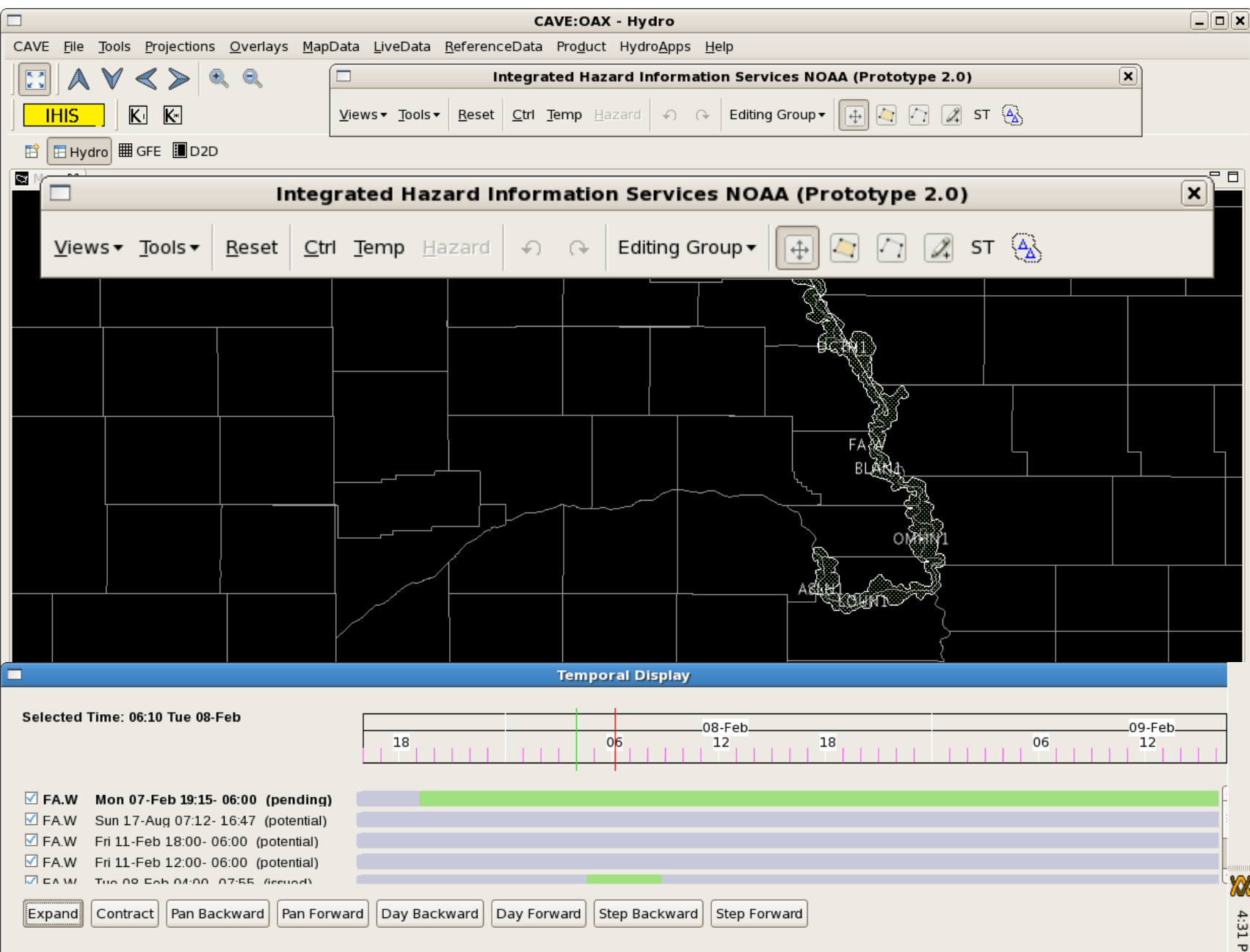
# Demo















Product Editor

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/O.NEW.KBOU.WS.W.0001.110207T1915Z-110213T0600Z/  
  
BULLETIN - EAS ACTIVATION REQUESTED  
FLOOD WARNING  
NATIONAL WEATHER SERVICE DENVER CO  
451 PM GMT TUE NOV 15 2011  
  
THE NATIONAL WEATHER SERVICE IN DENVER HAS ISSUED A  
FLOOD WARNING FOR  
  
MILLS-WOODBURY-MONONA-HARRISON-POTTAWATTAMIE-  
DOUGLAS-WASHINGTON-SARPY-CASS-SAUNDERS-BURT-THURSTON-  
DAKOTA.  
  
\* UNTIL 600 AM GMT SUN FEB 13 2011  
  
PRECAUTIONARY/PREPAREDNESS ACTIONS...  
  
FLOODING IS OCCURRING OR IS IMMINENT. IT IS IMPORTANT TO  
KNOW WHERE YOU ARE RELATIVE TO STREAMS...RIVERS...OR  
CREEKS WHICH CAN BECOME KILLERS IN HEAVY RAINS. CAMPERS  
AND HIKERS SHOULD AVOID STREAMS OR CREEKS.  
  
&&  
  
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IAZ079-031-043-055-069-  
NEZ052-045-053-067-051-034-015-014-151651-  
  
/O.NEW.KBOU.WS.W.0001.110207T1915Z-110213T0600Z/

Issue

Propose

Dismiss

The screenshot shows the CAVE software interface. At the top, there's a window titled "CAVE" with a 3D view of a building facade. A yellow rectangular area is highlighted on the facade, labeled "IH". Below the 3D view, there's a list of selected elements under the heading "Select". The list includes five items, each with a checked checkbox and the text "FA":

- ☒ FA
- ☒ FA
- ☒ FA
- ☒ FA
- ☒ FA

Below the list, there's a button labeled "Expand".

Product Editor

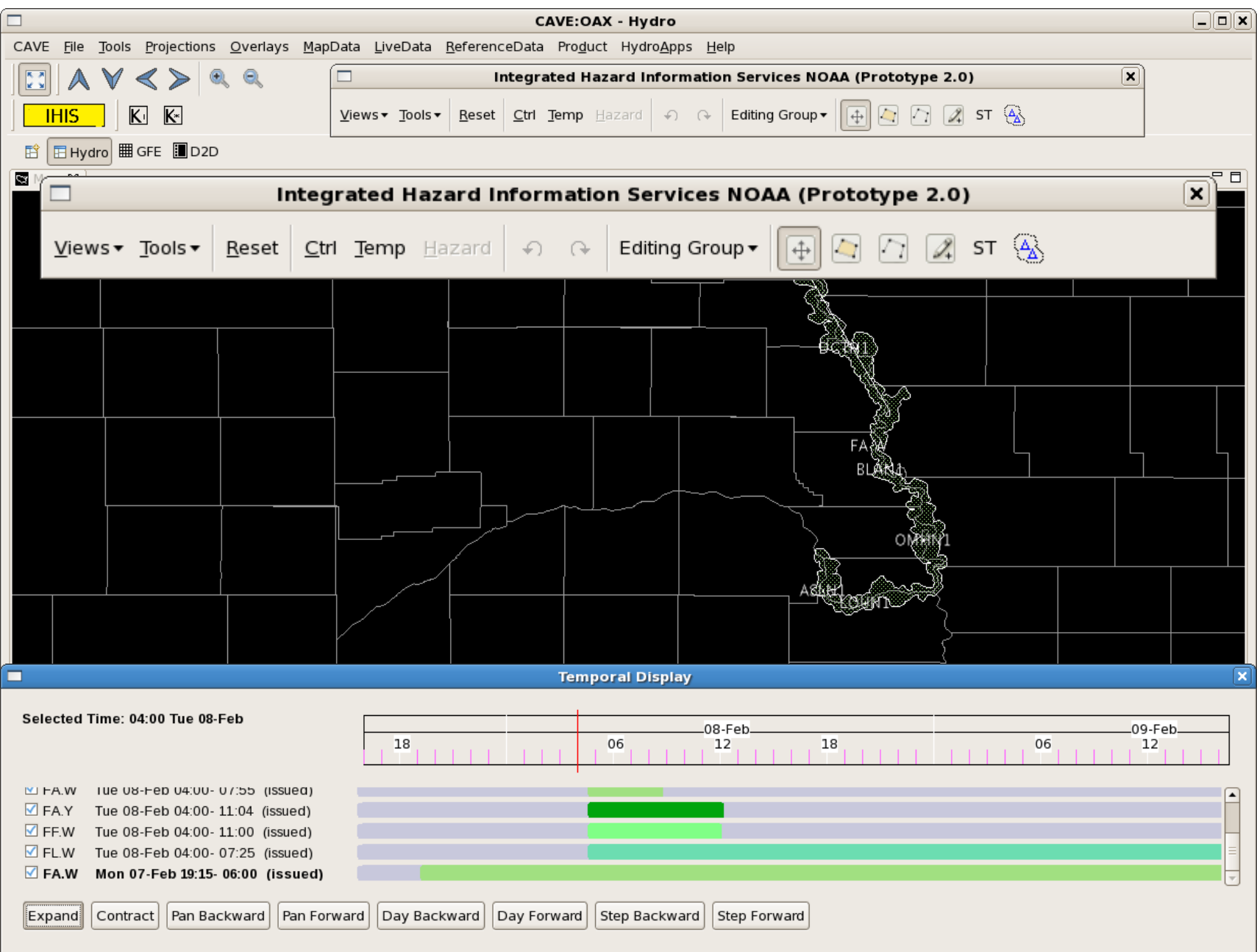
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BULLETIN - EAS ACTIVATION REQUESTED  
FLOOD WARNING  
NATIONAL WEATHER SERVICE DENVER CO  
451 PM GMT TUE NOV 15 2011  
  
THE NATIONAL WEATHER SERVICE IN DENVER HAS ISSUED A  
FLOOD WARNING FOR BLAIR  
  
\* FROM 7:15 PM MONDAY TO 6:00 PM TUESDAY  
  
\* AT 4:51 PM GMT TUESDAY THE STAGE WAS AT 30.76 FEET.  
  
\* MODERATE FLOODING IS OCCURRING AND MODERATE FLOODING  
IS FORECAST.  
  
\* FLOOD STAGE IS 29.0 FEET.  
  
FORECAST...BLAIR WILL RISE ABOVE FLOOD STAGE 7:15 PM  
MONDAY AND CREST NEAR 31.94 FEET 2:46 AM TUESDAY. BLAIR  
WILL FALL BELOW FLOOD STAGE BY 6:00 PM TUESDAY. MODERATE  
FLOODING IS FORECAST.  
  
PEOPLE IN FLOOD PRONE AREAS SHOULD ACT NOW TO EVACUATE  
AND MOVE TO HIGHER GROUND. DO NOT ENTER ALREADY  
FLOODED AREAS OR ATTEMPT TO CROSS ROADWAYS COVERED  
BY HIGH WATER. STAY TUNED FOR FURTHER INFORMATION BY  
LISTENING TO WEATHER RADIO OR LOCAL MEDIA SOURCES.  
  
&&  
  
\$\$

Issue

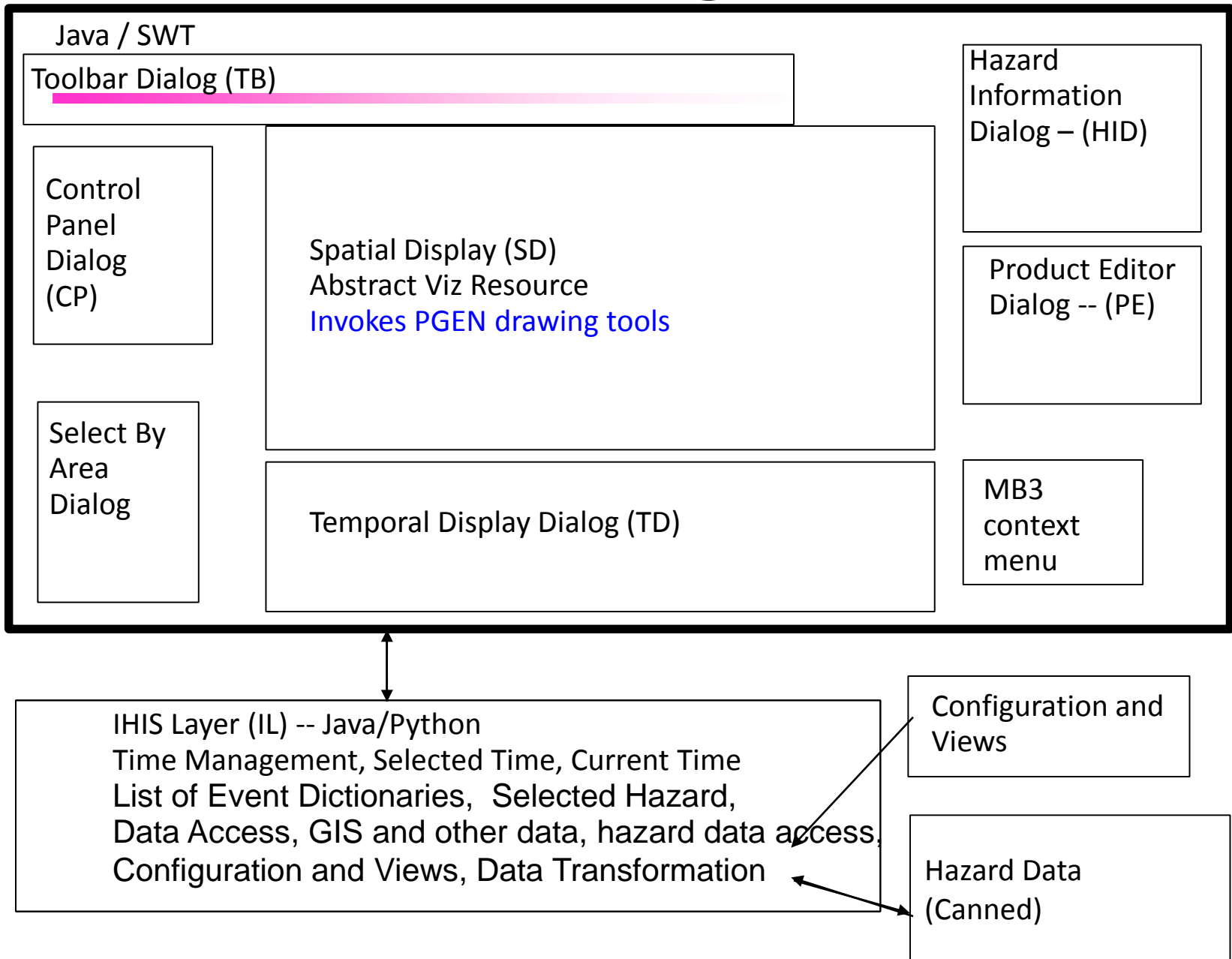
Propose

Dismiss





# IHIS Plug-in





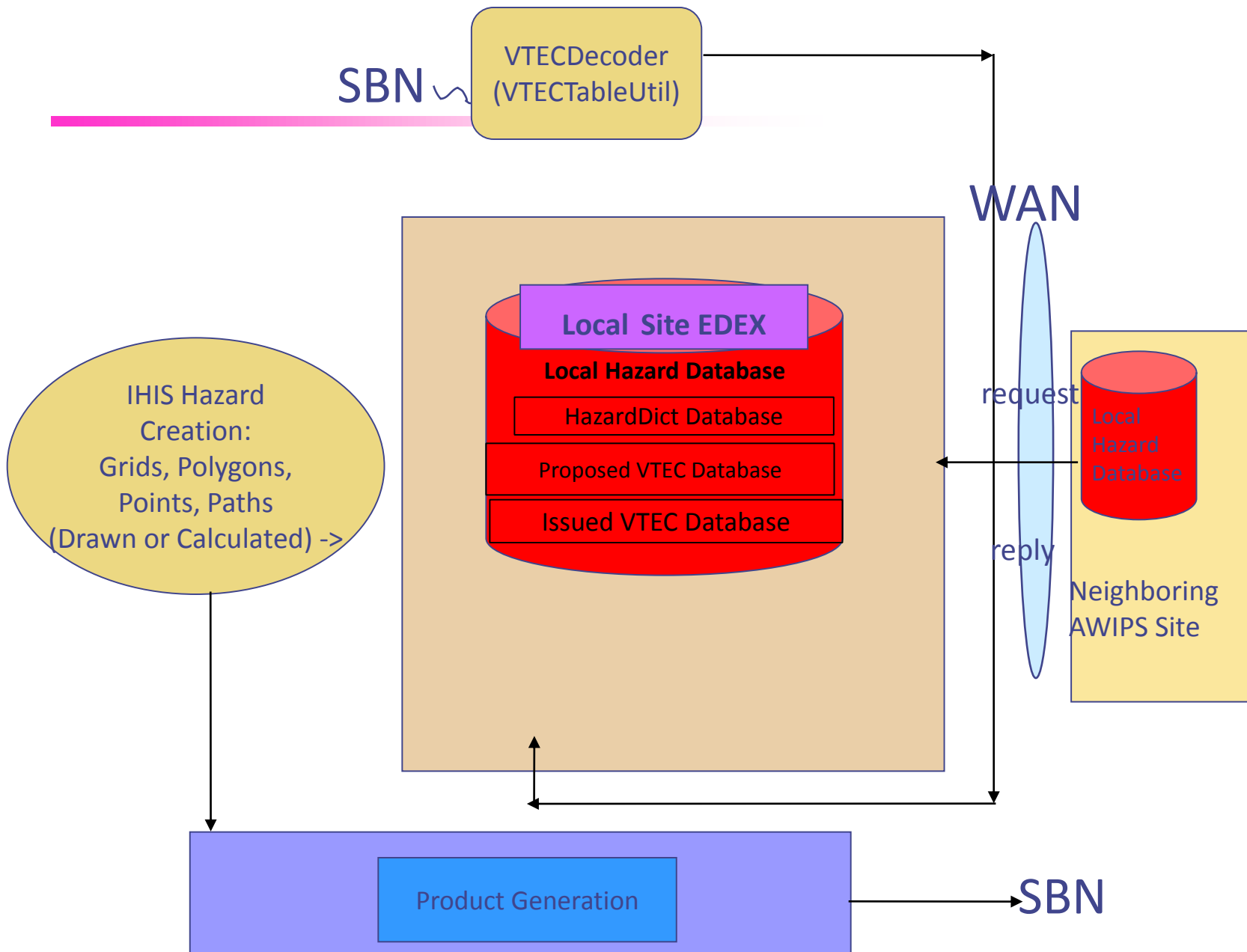
# Design for National Database

# Integrated Hazard Information Services

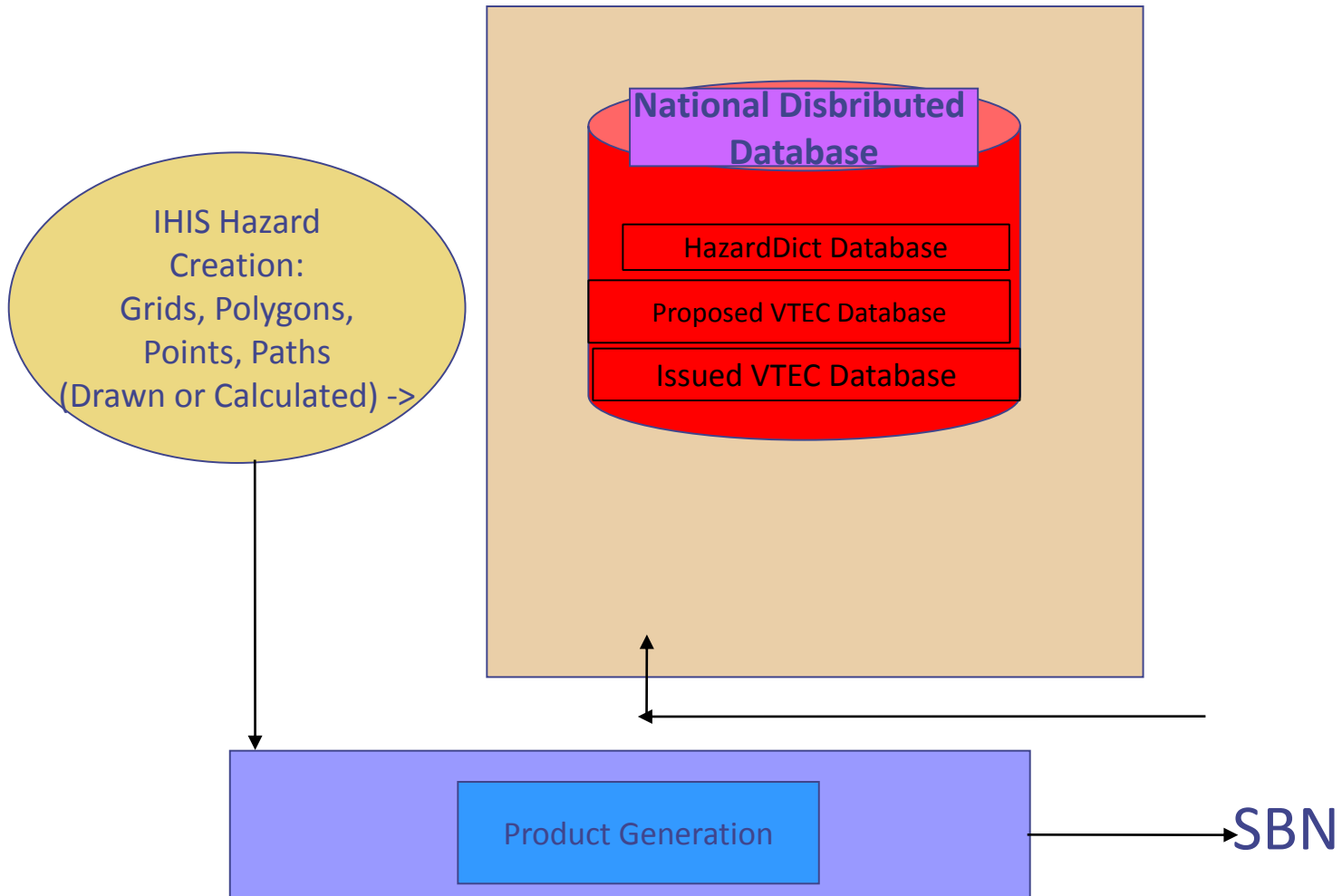
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- Moving from **Product-Centric** to **Information-Centric Hazard** Information
- Hazard information gathered across perspectives in diverse ways and then converted to and stored in a common format
- If hazard information is stored only in local EDEX, still need to ingest text products and merge hazard information from neighboring sites

# IHIS – Local EDEX Solution



# IHIS – Local EDEX Solution




# Comments

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- National Distributed Database would eliminate need for Ingesting and Merging from neighboring sites
- Legacy products can still be generated, but the system is no longer product-centric.
- The “information” is the hazard and can be generated in multiple forms – text, graphics, cell phones, radio, etc.
- Even longer-term solution would alter VTEC from being product-centric to being information-centric
- ***Many challenges with Performance and Security that need to be explored.***





# Requirements Analysis

## Where are we now?

# Requirements Analysis

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- Overview and rough estimates:
  - Many features have been identified and are described
    - on the Wiki “Design Concepts” page
  - Prototyping has
    - **“Touched on” ~60%** of requirements
    - Provided a good launching point for gathering functional requirements and IOC design
    - **Yet only covers ~20%** of the functionality
  - Some additional features would benefit from prototyping..

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## Next Steps and Future Work

# Current Work - 2011

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- 2011 Prototyping
  - **Hydro Prototype Pathway**
  - “Live Data” VTEC processing and local storage
- ***IHIS Workshop – Sept 27-29***
  - ***Focused on Phase 1 – AWIPS II Forecaster Tools***
  - Engaged User community in gathering requirements and define user interfaces
  - Focused on Hydro plus advancements in Short-fused, Long-fused
  - ***Defining Initial Operating Capabilities***

# Future Work Ideas

- Consulting with RTS on production development
- Prototyping and requirements refining
- Phase 1
  - **Framework** for Recommenders and Text Products
  - **Short-fused** NWSWarn and NSSL PHI improved warning area definition
  - **Long-fused** Interaction with GFE grids, Hurricane Warning
  - **Iris Database** – working with Iris team on storage formats, security, authentication
  - **Common data access** for forecasters – GIS info, maps, data, models, grids
- Phase 2 – National Center requirements

# Project Time Line

- **RTS Production Coding in Collaboration with GSD**
  - Scheduled to begin Jan 2012, but may slip if OAX not transitioned by then.
- **GSD prototyping / requirements-gathering in 2012**
  - Selected Phase 1 capabilities
  - Begin Phase 2?
- **Phase 1 Target Completion: July 2013.**
  - There may be incremental releases for evaluation before that time.

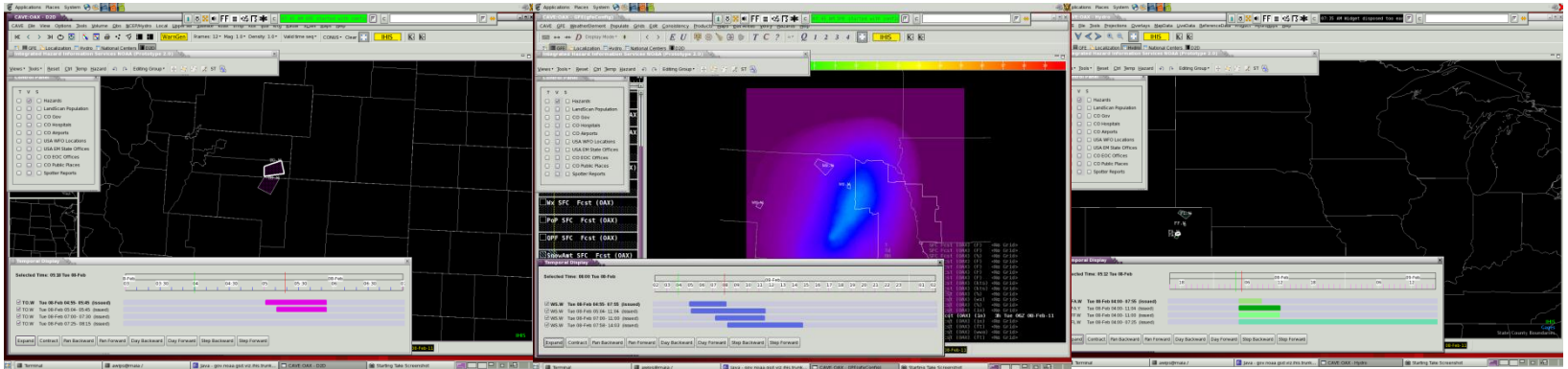
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# Forecaster of the Future



# IHIS across perspectives

## First step toward integrating AWIPS Applications



- Common Data Access
- Common Tools – iTools, Recommenders, Text Products
- Collaboration
  - Real-time
  - Data Sharing
- National Data “Cloud”

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# APPENDIX

# Wiki Tour

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- **Common Interface / IhisProject:**  
<https://collaborate.nws.noaa.gov/trac/ci/wiki/IhisProject>
- **Requirements and Design Concepts**
  - Summary of operational requirements from OSIP document
  - Technical and Functional requirements corresponding to operational requirements
    - Being continually refined through prototyping
  - Architecture and Design Options
  - Hydro Requirements

# Wiki Tour

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- **Feature Requests**
  - Instructions on joining the listserver
  - Notes from forecaster feedback sessions and resulting tasks completed
- **Task Tracking**
- **Developer's Page**
  - Software set-up and maintenance notes

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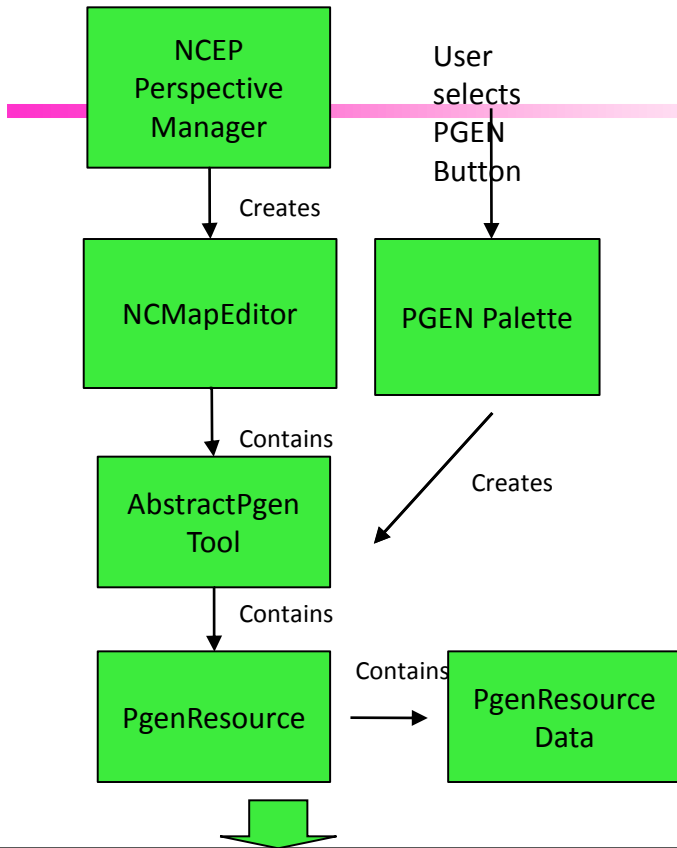
## PGEN Drawing Tools in IHIS

# What is PGEN?

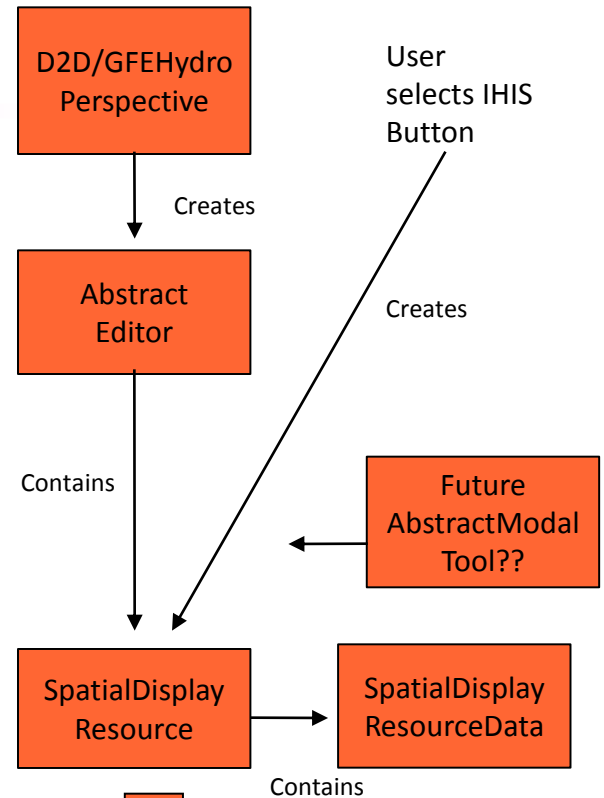
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- AWIPS II NCEP Product Generator CAVE Plug-in
- Integrates NAWIPS drawing capabilities into CAVE.
- Supports NCEP drawing requirements for outlooks, surface analysis, and general annotation
- Provides a rich palette of drawing tools
- Plug-in being refactored for extensibility and reusability

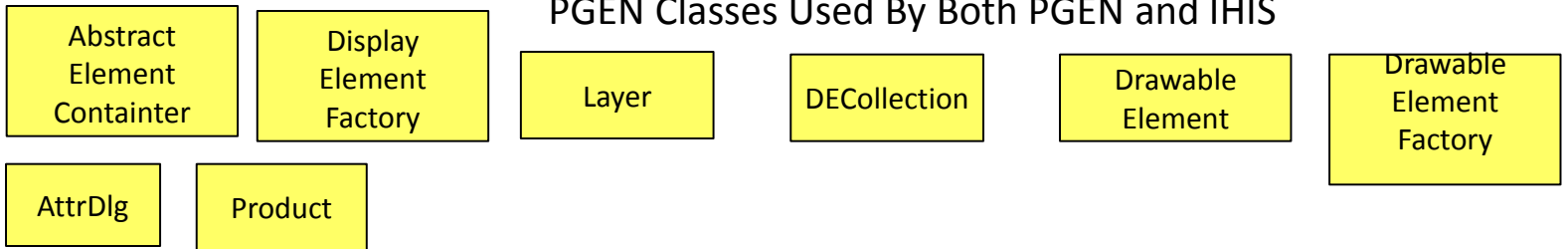
## PGEN



## IHIS



## PGEN Classes Used By Both PGEN and IHIS



OpenGL